MUTILATION OF STRANDED SEA TURTLES ALONG THE TEXAS COAST

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Systematic surveys documenting sea turtle strandings along Texas beaches were initiated in 1986 by the National Marine Fisheries Service (NMFS), Southeast Fisheries Center's (SEFC) Galveston Laboratory as part of the Sea Turtle Stranding and Salvage Network (STSSN). These surveys initially covered 138 km of beach comprising Jefferson, Chambers, Galveston, and Brazoria Counties. The survey area was expanded to 296 km of beach with the addition of Matagorda and Calhoun Counties in April 1987.

Beaches were surveyed twice monthly with 4-wheel drive and all-terrain vehicles. Stranded carcasses were returned to the TAMU Marine Laboratory in Galveston and necropsied in an attempt to determine cause of death and note external and internal anomalies resulting from apparent human-inflicted and natural mutilation. Necropsies were not performed on stranded specimens reduced to dried carcasses or disarticulated skeletal remains. Natural history information including morphometric, food habit, sex, and reproductive development data was recorded during necropsy examination.

The 89 sea turtles necropsied in 1986 and 1987 included 42 Kemp's ridley (*Lepidochelys kempi*), 44 loggerheads (*Caretta caretta*), and 3 greens (*Chelonia mydas*). Each necropsied turtle was assigned to one of three mutilation categories: 1) non-mutilated; 2) human-inflicted mutilations - anatomical injuries apparently purposefully inflicted by humans to the turtle while at sea or on the beach; and 3) other mutilations - those injuries resulting from natural trauma such as shark predation and by incidental contact with man-operated machinery (i.e., boat propellers). Human inflicted mutilation was distinguished by: 1) presence of straight-edge incisions characteristic of knife or axe induced wounds; 2) lack of ragged tissue or teeth remains characteristics of predation induced wounds; 3) presence of lines or ropes purposefully tied to an appendage to restrain, bind or choke the turtle; and 4) evidence of a gunshot wound or blows from a sharp or blunt object. Turtles with human-inflicted mutilation were categorized as to the anatomical site of injury (i.e., head, front flippers, and rear flippers). The 34 turtles exhibiting human-inflicted mutilations included 10 ridleys, 21 loggerheads, and 3 greens.

The mutilation "season" tended to follow the same pattern recorded for sea turtle strandings along Texas beaches, with peak numbers in April or May and a steady decrease thereafter. However, the large percentage increase in number of mutilations per stranding from 1986 to 1987 coin-

cided with a sizeable decline in number of total strandings across the two years (1986 - 173; 1987 - 105).

Eleven (26%) of the 42 turtles necropsied in 1986 exhibited human-inflicted mutilation as compared to 23 (49%) of 47 in 1987. Five (11%) of the 1987 assemblage also exhibited other non-human inflicted mutilation. A large percentage of the 34 turtles exhibiting human inflicted mutilation exhibited trauma to more than one appendage (i.e., head and front flippers or head and all flippers mutilated). Twenty-three (68%) of these turtles exhibited head mutilation while 30 (88%) had front flipper mutilation and 19 (56%) experienced rear flipper mutilation.

All turtles found mutilated in 1986 were located in Galveston County while their 1987 counterparts showed a wider spatial distribution across all but one of the six counties surveyed (Jefferson, 5; Chambers, 0; Galveston, 10; Brazoria, 3; Matagorda, 6; and Calhoun, 4).

Rates of mutilation differed for the three sea turtle species necropsied, but all except greens exhibited an increasing percentage of mutilation from 1986 to 1987. Kemp's ridleys' increased mutilation rate (1986 - 15%; 1987 - 50%) occurred despite a reduction in yearly stranding totals. Increases in loggerhead mutilation rate (1986 - 40%; 1987 - 62%) coincided with similar stranding trends.

Carapace length statistics for mutilated loggerheads mirrored those for stranded, non-mutilated members of this species. However, carapace lengths of most mutilated ridleys appeared to indicate some selectivity for older, larger individuals. The majority of mutilated ridleys fall in the 60 to 69 cm carapace length range while most of their non-mutilated counterparts were between 30 to 39 cm. This may suggest there is selective mutilation directed towards mature ridleys but a much larger data base is needed to substantiate this hypothesis.

Mutilation of endangered sea turtles may be attributed to several causes, some of which are difficult to verify. Two causes of natural mutilation are definitely known, these being shark attack and incidental contact with boat propellers. Other possible causes of mutilation are largely conjecture. Underwater detonations used in petroleum platform salvage operations may cause mutilations. Other causes may be related to the fishing industry. Longline fishermen reportedly catch turtles on baited hooks. Fishermen on piers have caught turtles. Other fishermen who catch turtles offshore may mutilate them in an effort to prevent the carcass from floating and eventually reaching shore. Another possible cause may be beach-going tourists seeking novelty items such as a turtle skull or intact carapace. Some of our survey beaches have more public access than others and this may account for increased numbers of mutilations in these areas. Although difficult, causes of mutilations must be determined and decreased, thus possibly lowering strandings and preventing continued decline of sea turtle stocks.